# REMARKS

## Amendments

In the claims, the subject matter of claim 6 has been incorporated into claim 1 and claim 6 has been canceled. Claim 7 has also been canceled. These amendments have been made in the interest of rapid prosecution and without prejudice to Applicant's right to prosecute claims similar or different to the unamended claims in one or more continuation or divisional applications.

## The Rejection Under 35 USC § 103(a)

Applicant respectfully traverses the rejection of claims 1-3 and 8-13 under 35 USC § 103(a) as unpatentable over Tani (JP10-270217) in view of Matsuda (JP06-163203), insofar as the rejection is applicable to the amended claims.

The present claims are directed to a PTC thermistor in which at least one electrode is attached to a PTC element (member) comprising a conductive polymer by means of a conductive adhesive. The adhesive is designed so that when it is exposed to a high temperature for an extended period, i.e. in a temperature range in which the conductive polymer thermally expands, it will deteriorate, causing the resistance of the adhesive to increase. As a result, the current flowing through the PTC element decreases and the voltage that was borne primarily by the PTC element in the beginning is also borne by the adhesive. Eventually, when the electrical resistance of the adhesive becomes greater than the electrical resistance of the PTC element, the adhesive primarily bears the voltage. The thermal energy consumed by the PTC element is reduced, the PTC device returns to a low resistance state from a high resistance ("tripped") state, and self-generation of heat stops. Thus, a state where the PTC element fails is not reached and the safety of the circuit in which the PTC device is installed is maintained.

Tani discloses a current limiter in which a ceramic PTC element is sandwiched between terminal plates and is electrically connected to such plates by a conductive bonding agent. The ceramic PTC element increases in resistance via a phase change at the Curie temperature, not through thermal expansion of a conductive polymer. Tani does not teach or suggest the thermal deterioration of the conductive bonding agent in a temperature range in which a conductive polymer thermally expands because Tani uses a ceramic PTC element.

The deficiencies of Tani are not resolved by the addition of Matsuda. Matsuda discloses a conductive adhesive that exhibits a change in conductivity with temperature. The adhesive comprises a mixture of conductive powder (e.g. gold, silver or nickel) mixed with a thermoplastic or thermosetting resin. There is in Matsuda no teaching that the adhesive can or should be used in combination with another electrical component to attach electrodes onto a PTC element, still less that the adhesive may be used in an overheated state to deteriorate and provide additional protection. In fact, the teaching of Matsuda is that the adhesive itself can act as a switch when exposed to a change in temperature and further, in contrast to the present claims, that the adhesive performs well at elevated temperature, not that it deteriorates (see Table 1)

If Tani were combined with Matsuda, one of ordinary skill in the art would not be taught that an adhesive could be used as part of an improved device, still less that a change in conductivity of the adhesive would be irreversible. As a result, this rejection is unfounded. The claims dependent on claim 1 are likewise not obvious.

Disclosure Under 37 CFR § 1.56

In fulfilling the duty of candor and good faith, the following document is hereby disclosed to the Patent Office in accordance with 37 CFR § 1.56. It is not admitted that the information in the listed document is material to patentability as defined in 37 CFR § 1.56(b). The Examiner is requested to consider the document in the examination of this application.

Accompanying this statement is Form PTO/SB/08A in duplicate on which the document is listed. The Examiner is requested to return an initialed and signed copy of the form once the documents have been considered.

The following document was cited in the examination of Chinese Patent Application No. 200480017532.0, which is a counterpart of the present application. A copy of this document is attached.

FOREIGN PATENT DOCUMENTS

| Document Number | Publication Date | Name of Patentee or Applicant | Translation |
|---|---|---|---|
| WO-02/091398-A2 | 11-14-2002 | Tyco Electronics Raychem K.K. | N/A* |

*Counterpart of U.S. Patent No. 6,862,164, issued March 1, 2005.

Fee

In accordance with 37 CFR § 1.97(c)(2), the Commissioner is authorized to charge the fee for submitting this Information Disclosure Statement ($180) to Deposit Account No. 18-0560.

Conclusion

It is believed that this application is now in condition for allowance and such action at an early date is earnestly requested. If, however, there are any outstanding issues which can be usefully discussed by telephone, the Examiner is asked to call the undersigned.

Respectfully submitted,

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